REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-13 are pending in this application. No claim amendments are presented, thus no new matter is added.

In the Office Action, Claims 1-2, 5-7 and 10-13 are rejected under 35 U.S.C. § 102(e) as anticipated by Sheu et al. (IEEE ICC, pp. 611-618, "A Fast and Efficient Heuristic Algorithm for the Delay and Delay Variation Bound Multicast Tree Problem," 2001, herein Sheu); and Claims 3-4 and 8-9 are rejected under 35 U.S.C. § 103(a) as unpatentable over Sheu.

The undersigned appreciatively acknowledge the courtesy extended by Examiner Nguyen in holding a personal interview with the undersigned on November 17, 2008. During the interview an overview of the claimed invention was presented, and the pending claims were discussed in light of the applied reference, Sheu. No agreement was reached during the interview pending the submission of a formal response to the outstanding Office Action.

In response to the above-noted rejections under 35 U.S.C. § 102 and 35 U.S.C. § 103 in view of Sheu, Applicants respectfully submit that independent Claims 1, 3, 5, 10 and 12 recite novel features clearly not taught or rendered obvious by the applied reference.

Independent Claim 1 is directed to a multicast communication path calculation method for obtaining multicast paths from a given source node to a plurality of destination nodes in a network including a plurality of nodes. The method, in part, comprises:

> obtaining minimum delay paths from the source node to each of the destination nodes using topology information and delay information of the network;
> selecting candidate nodes of a rendezvous point node ***only from nodes on one of the obtained minimum delay paths***;
> for ***each of the candidate nodes*** [on the one minimum delay path], calculating minimum delay paths from the candidate node to each of the

> destination nodes, and obtaining a difference between the maximum value and the minimum value among delays of the calculated minimum delay paths;
> selecting, as the rendezvous point node, the candidate node for which the difference is smallest among differences for all of the candidate nodes...

Independent Claims 3, 5, 10 and 12, while directed to alternative embodiments, recite similar features. Accordingly, the remarks and arguments presented below are applicable to each of independent Claims 1, 3, 5, 10 and 12.

As disclosed in an exemplary embodiment at Figs. 5-9 of the specification, minimum delay paths from a source node 20 to each of a plurality of destination nodes 1-5 are obtained using topology and delay information of the network. Then (as recited in Claim 2, for example), the minimum delay path having the maximum delay path is selected, and candidate nodes of a rendezvous point node are selected ***only from the nodes on the maximum delay path*** (e.g., ***only*** from nodes ***on one*** of the obtained minimum delay paths).

Turning to the applied reference, Sheu describes a Delay and Delay Variation Constraint Algorithm (DDVCA) that avoids the delay variations associated with "shortest path tree" method by establishing a central node in a network.[1]

Sheu, however, fails to teach or suggest "selecting candidate nodes of a rendezvous point node ***only*** from nodes on ***one*** of the obtained minimum delay paths", and calculating minimum delay paths from ***each candidate node*** [from the ***one*** obtained minimum delay path] to each of the destination nodes as recited in independent Claim 1.

In rebutting arguments consistent with those outlined above, the Office Action cites p. 613, ll. 15-16 of Sheu, which describes that a minimum delay path algorithm is used to select the central node. However, as will be discussed below, Sheu calculates the minimum delay paths from the destination nodes to each of the nodes in the network to determine the central (e.g. rendezvous) node, and does not limit the minimum delay path calculating to nodes ***only*** on ***one*** of the minimum delay paths, as claimed.

[1] Sheu p. 613, col. 1, ll. 1-13.

The Office Action cites p. 613, ll. 26-34 in maintaining the outstanding rejection. This cited portion of Sheu describes a conventional *shortest path tree* method in which individual paths are set up between the source node and the destination node using the minimum delay path between the two nodes. As described at the top of p. 614 of Sheu, however, this method does not involve the calculation of a central node, whatsoever, and is not relevant to the claimed method. Instead, Sheu states that a combination of a core router concept and the calculation of a minimum delays paths "form the fundamental strategy of DDVCA."

Sheu, on p. 614, first full paragraph, then describes that DDVCA first calculates the minimum delay between each destination node and each other node in the network. Then, for each node, DDVCA computes the associated multicast variation between the node and each destination node. Then it selects the node with the minimum multicast delay variation as the central node. Thus, Sheu fails to disclose selecting candidate nodes for the central node ***only*** from nodes on ***one*** of the obtained minimum delay paths the source node to each of the destination nodes, and calculating minimum delay paths from ***each candidate node*** [from the ***one*** obtained minimum delay path] to each of the destination nodes as recited in independent Claim 1.

In contrast, Sheu operates in a manner similar to that disclosed at p. 3, l. 30 – p. 4, l. 15 of the specification in which for each node in the network, associated multicast delay variation between the node and each destination node is calculated. As disclosed at p. 4, l. 18 – p. 5, l. 35 of the specification, such a method of determining the central node is very complex since each of the nodes in the network are candidates for the central node. The method of Claim 1 remedies this shortcoming by limiting the candidates for rendezvous nodes as ***only*** being nodes on ***one*** of the obtained minimum delay paths. Thus, the minimum delay paths from ***only*** the nodes on the ***one*** obtained minimum delay paths are calculated,

instead of performing the calculation for all of the nodes in the network, as described in the background art and in Sheu.

In maintaining the rejection, the Office Action also cites p. 614, second col., ll. 2-5, Fig. 3 and p. 614, l. 18 – p. 615, l. 5 of Sheu. At p. 614, second col., ll. 2-5, Sheu describes that for each node, the associated multicast delay variation is calculated between the node and each destination node. Thus, Sheu again reinforces the concept that the minimum delay is calculated between each and every node in the network to each of the destination nodes, and fails to disclose limiting the number of candidate nodes in the network, whatsoever.

Furthermore, p. 614, l. 18 – p. 615, l. 5 of Sheu describes that Lines 3, 4 and 5 in DDVCA (Fig. 2) calculate the minimum delay from each destination node V_i to each other node *vi* in the network. This cited portion of Sheu further describes that for each node v_i in the network, Line 7 (Fig. 2) calculates the maximum delay and the minimum delay from each node v_i in the network to each destination node V_i, and calculates the corresponding multicast delay variation from each of the nodes v_i in the network to each destination node.

Thus, Sheu fails to disclose limiting the nodes in the network that are candidates as the central node, whatsoever, much less limiting the candidate nodes to being nodes on ***only one*** of the minimum delay paths from the source node to each of the destination nodes, as claimed. More specifically, Sheu fails to disclose "selecting candidate nodes of a rendezvous point node ***only*** from nodes on ***one*** of the obtained minimum delay paths", and calculating minimum delay paths from ***each candidate node*** [from the ***one*** obtained minimum delay path] to each of the destination nodes as recited in independent Claim 1.

Accordingly, Applicant respectfully requests that the rejection of Claim 1 under 35 U.S.C. § 102 be withdrawn. For substantially similar reasons, it is also submitted that independent Claims 3, 5, 10 and 12 patentably define over Sheu and Applicant respectfully

requests that the rejection of these claims under 35 U.S.C. § 102 and 35 U.S.C. § 103 be withdrawn.

The Office Action also rejects dependent Claims 2, 6, 11 and 13 under 35 U.S.C. § 102(e) as anticipated by Sheu. Applicants respectfully traverse this rejection, as dependent Claims 2, 6, 11 and 13 recite novel features clearly not disclosed by Sheu.

Dependent Claim 2, for example, depends from Claim 1 and recites that

> the minimum delay path ***on which the candidate nodes exist is one having maximum delay*** among minimum delay paths from the source node to each of the destination nodes.

Dependent Claims 6, 11 and 13, while directed to alternative embodiments, recite similar features. Accordingly, the remarks and arguments presented below are applicable to each of dependent Claims 2, 6, 11 and 13.

As disclosed in an exemplary embodiment at Fig. 8, and its corresponding description in the specification, the one of the obtained minimum delay paths is the path that had the maximum delay from the source node to the destination node. Otherwise stated, Claim 2 limits the "one of the obtaining minimum delay paths" on which the candidate node exists as being the delay path having the ***maximum delay***. As noted above, Sheu fails to limit the candidate nodes to those on a minimum delay path, whatsoever, much less to the minimum delay path having a maximum delay among the minimum delay paths, as recited in Claim 2.

In rejecting Claim 2, the Office Action again relies on p. 614, l. 18 – p. 615, l. 5 of Sheu which describes that Lines 3, 4 and 5 in DDVCA (Fig. 2) calculate the minimum delay from each destination node V_i to each other node vi in the network. This cited portion of Sheu further describes that for each node v_i in the network Line 7 (Fig. 2) calculates the maximum delay and the minimum delay from each node v_i in the network to each destination node V_i, and calculates the corresponding multicast delay variation from each of the nodes v_i in the network to each destination node.

Thus, this cited portion of Sheu fails to disclose limiting the central candidate nodes, whatsoever, much less limiting the candidate nodes to nodes ***only*** on the ***one*** minimum delay path "***having maximum delay*** among minimum delay paths from the source node to each of the destination nodes" as recited in Claim 2.

Accordingly, for at least the reasons discussed above, Applicants respectfully request that the rejection of dependent Claims 2, 6, 11 and 13 under 35 U.S.C. § 102 be withdrawn.

Consequently, in view of the present amendment and in light of the foregoing comments, it is respectfully submitted that the invention defined by Claims 1-13 is patentably distinguishing over the applied references. The present application is therefore believed to be in condition for formal allowance and an early and favorable reconsideration of the application is therefore requested.

Respectfully submitted,

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